CLAIMS

1. A method for air-cooling of the rotor and the coil end section of a stator provided with winding (3) in a rotating electric machine, **characterized** in that the cooling air passes first through the coil end section (20) and then completely or partly axially into the air gap (15) between the rotor (4) and the stator (2) so as to reverse axially at the centre of the rotor by being guided into axial rotor ducts (9) and then out through the rotor ducts whereupon the air is cooled and the circulation is then repeated.

2. A method according to claim1, **characterized** in that the cooling air is partly guided into the end section of the rotor in order to cool the field winding (10) at the end of the rotor (21).

3. A method according to any one of claims 1 - 2, **characterized** in that the cooling air is divided so that of the 100% air that flows through the coil end section (20) approximately 70% flows through the air gap/rotor ducts (15, 9) and the remaining 30% is led to the end section of the rotor in order to cool the end of the rotor (21).

4. A method according to any one of claims 1 - 3, **characterized** in that the cooling air on entering the coil end section (20) is brought to rotate such that vortex formations and turbulence in the coil end section (20) are achieved.

5. A method according to any one of claims 1 - 3, **characterized** in that the air is guided by screens (16, 17) in the coil end section (20).

6. A method according to any one of claims 1 - 5, **characterized** in that the heated cooling air from the rotor (4) is kept separate from the coil end section (20).

7. A method according to any one claims 1 -6, **characterized** in that the heated air from the rotor (4) undergoes pressure in a fan (7) and a diffuser (18) after which the air is cooled in an air cooler (19).

8. A method according to any one of claims 1 - 7, **characterized** in that the circulation of cooling air at the opposite axial side of the rotor takes place in a corresponding way, i. e., according to any one of claims 1 - 6.

9. A method according to any one of claims 1 - 8, **characterized** in that the winding (3) is composed of a cable in the form of a flexible electric conductor having a casing trapping the electric field surrounding the conductor.

10. A rotating electric machine (1) having a stator (2) provided with winding (3) and a rotor (4) provided with field windings (10) which are surrounded by rotor ducts (9), which rotor (4) is arranged to be cooled by air flowing axially through the ducts (9) of the rotor (4), **characterized** in that the rotor (4) and the coil end section (20) of the stator are arranged to be cooled by the cooling air passing through the coil end section (20) and to continue completely or partly axially into the air gap (15) between the rotor (4) and the stator (2) so as to then reverse axially at the centre of the rotor (4) by being led into the axial rotor ducts (9) and out of the rotor ducts after which the air is cooled and the circulation is then repeated.

11. A machine according to claim 10 **characterized** in that the cooling airflow is achieved by a fan (8) being connected to the rotor (4) and a diffuser (18) being connected to the fan.

12. A machine according to any one of claims 10-11, **characterized** in that the cooling airflow is arranged to be axially forced into the air gap (15) towards the centre (4) of the rotor from each coil end section (20).

13. A machine according to any one of claims 10-12, **characterized** in that the stator winding (3) is composed of a high voltage cable in the form of a flexible electric conductor having a casing capable of trapping the electric field accrued around the conductor.

14. A machine according to any one of claims 10-13, **characterized** in that the casing comprises an insulation system having an insulation made of a solid insulation material and an outer layer on the outside of the insulation having an

electric conductivity higher than the insulation so that the outer layer, by being connected to earth or other wise relatively low potential, is capable of partly functioning in a potentially equalising way and to partly, in principle, contain the accrued electric field on the inside of the outer layer as a result of said electric conductor.

15. A machine according to any one of claims 10-14, **characterized** in that the insulation system comprises an insulation made of a solid insulation material and an inner layer on the inside of the insulation, at least one of the said electric conductors being arranged on the inside of the inner layer, and that the inner layer has a lower electric conductivity than the electric conductor but sufficient for the inner layer to function in a potentially equalising way and thereby equalising with respect to the electric field on the outside of the inner layer.

16. A machine according to any one of claims 10-15, **characterized** in that the solid insulation and the outer layer are made of polymer material.